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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/583,120	05/30/2000	SHRIRAM BAGRODIA	05015.0302	1838

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EXAMINER

WYROZEBSKI LEE, KATARZYNA I

ART UNIT

PAPER NUMBER

1714

10

DATE MAILED: 04/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

TP-10

Office Action Summary	Application No. 09/583,120	Applicant(s) BAGRODIA ET AL.	
	Examiner Katarzyna W. Lee	Art Unit 1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s) _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>9</u> . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Election/Restrictions

1. Applicant's response to the restriction requirement is confusing for the following reason.

The applicant state that they do not contest the distinctions between the Group I and II at the same time the applicant traverse the restriction stating that the examiner has not shown a burden resulting from the prosecution of the two groups. Is the applicant traversing the restriction requirement or not. In any even the examiner will treat the restriction requirement as one with traverse and apply following form paragraphs.

2. Applicant's election with traverse of Group I claims 1-18 and 22-30 in Paper No. 8 is acknowledged. The traversal is on the ground(s) that the examiner has not shown that it would be a serious burden to examine all the claims. This is not found persuasive because the examiner indicated two completely distinct classes, which belong to two entirely different art units, which need to be search in order to prosecute all the claim.

The requirement is still deemed proper and is therefore made FINAL.

3. With respect to the applicants arguments that the examiner has not prosecuted all the elected claims, mainly claim 22, the applicant is asked to carefully review paragraph 9 of the first office action on the merits mailed on 10/30/01, where it is clearly disclosed in form paragraph

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utilized, that claim 22 is rejected over the prior art of record. Therefore all the claims have been acted on.

Claim Rejections - 35 USC § 112

4. With respect to the applicant's arguments regarding Markush claims, such have been discussed throughout the prosecution of the co-pending applications and the examiner did indicate that the rejection was applied improperly and that it will be withdrawn. However; the examiner also indicated that all the claims containing term "Wyoming-type" that were not rejected are indefinite and will have to be amended to exclude the term "-type".

Claim Rejections - 35 USC § 102

In the light of the applicant's amendment, the prior art of Pinnavaia does not explicitly teach in the examples of claim the limitation of the polyamide. Therefore the rejection under 102 paragraph is overcome.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1, 2, 5-8, 10-12, 14-17, are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinnavaia (US 6,017,632) in view of Cleary (US 6,050,509).

The discussion of the disclosure of the prior art of Pinnavaia and Cleary from paragraphs 4 and 8 of the previous office action mailed on 10/30/2001 is incorporated here by reference.

7. Claims 3, 4, 14, 13, 18, 22-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinnavaia (US 6,017,632) in view of Cleary (US 6,050,509) as applied to claims 1, 2, 5-8, 10-12, 14-17 above, and further in view of Beal (US 5,552,469).

The discussion of the disclosure of the prior art of Pinnavaia, Cleary and Beal from paragraphs 4, 8 and 9 respectively of the previous office action mailed on 10/30/2001 is incorporated here by reference. Newly added claim 31 is rejected over the prior art of Beal, which recites the oligomeric components in making a nanocomposite.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pinnavaia (US 6,017,632) in view of Cleary (US 6,050,509) and (US 5,552,469) as applied to claims 1-8, 10-31 above, and further in view of Maxfield (WO 94/1143).

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The discussion of the disclosure of the prior art of Pinnavaia, Cleary, Beal and Maxfield from paragraphs 4, 8, 9 and 10 respectively of the previous office action mailed on 10/30/2001 is incorporated here by reference. Newly added claim 31 is rejected over the prior art of Beal, which recites the oligomeric components in making a nanocomposite.

In the amendment filed on January 30, 2002 the applicant has argued the following:

a) The prior art of Pinnavaia merely discloses that the clay has been purified to remove quartz and other dense material without addressing the issue if small particle size quartz might be acceptable. Therefore the prior art of Pinnavaia is not inherent.

With respect to the above argument, although the 102 rejection over the prior art of Pinnavaia has been overcome, the 103 rejection still stands and therefore the argument will be addressed as obviousness type rejection.

The prior art of Pinnavaia states that the quartz has been "...purified to remove quartz and other dense, large grains contaminants...". To remove means to get rid off, to eliminate and so on. This means that the impurity can be removed completely. Although the prior art of Pinnavaia does not explicitly teach the numerical range or percentage of the impurity to be removed, which applicant has argued very strongly, the applicant has still not provided an evidence, which would show that the examiner is wrong. Especially, when it was realized that Mr. Tie Lan who is a co-inventor in the present invention as well as co-inventor in the prior art of Pinnavaia, some type of proof should be available. Mere statement and opinion that the prior

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art of Pinnavaia does not teach the percentages of clay removed is not enough to overcome a *prima facie* rejection under 103.

b) The Office action does not have enough legal basis to assert that the presence of quartz influences the haze of the nanocomposite.

Well, in addition to examiner's fast learning curve and knowledge that the presence of the impurity would be very visible during the blow molding, since quartz would not stretch with the thermoplastic, a further legal evidence of the fact that the impurities in clay increase haze and gas permeability can be further found in the prior art cited by the applicant. Specifically, US 6090734 to Tsipurski and US 6337046 B1 to Bragodia, which were in fact cited by the applicant.

c) Pinnavaia does not teach melt processible polyamide as the melt-processible polymer utilized in nanocomposite.

The examiner will agree that the prior art of Pinnavaia does not provide explicit teaching or example showing polyamide as melt-processible polymer. However; the prior art of Pinnavaia in col. 11 teaches that a thermoplastic polymers such as polyamide can benefit from the disclosed technology. Therefore a teaching of use of the polyamide is present in the prior art of Pinnavaia. *Prima facie* obviousness is therefore established.

d) Pinnavaia does not make it obvious nor teaches use of clays having quartz content of less than 2%. Therefore there is no motivation to utilize the prior art of Pinnavaia to arrive at the present claims.

Please see response to argument a).

e) The prior art of Pinnavaia teaches away from utilizing quaternary ammonium compounds, since the compounds utilized are employed as an intermediate for purifying the clay and are intentionally thermally decomposed.

Since the independent claims of the present invention do not call for presence of the onium compound, the prior art of Pinnavaia is still applicable against present claims. With respect to the applicant's arguments about onium compound being utilized for purification of clay following thermal decomposition, the examiner would like to add the following. Example that is being discussed E3, does state that the NH^+ cation is thermally decomposed. It also discusses an increase in basal spacing of the platelets of the clay due to treatment with cations. As a result of the treatment a pure NH^+ -montmorillonite was obtained with basal spacing of 14 angstroms and the clay underwent a cation exchange. With respect to the use of alkyl ammonium compound, the prior art of Pinnavaia discussed its adverse effect to the role of the clay as reinforcing agent and not to the ability of the cationic compound to cation exchange. The Table 5 further discloses montmorillonite clay exfoliated by the presence of octadecyl ammonium compound as a composition having excellent adhesive strength and it is not a comparative data.

f) The prior art of Cleary does not provide teaching about what polymers the purified clay can be used with.

With respect to the above argument, the prior art of Cleary was not utilized as a teaching for polymeric component of the nanocomposite, but as a teaching for so strongly argued

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numerical percentages in removal of quartz impurities. The *prima facie* obviousness exists in a statement that the pure clay of Cleary can be used in nanocomposites and that is exactly what is taught in the prior art of Pinnavaia.

g) Cleary does not provide a teaching or suggestion to modify the prior art of Pinnavaia to incorporate polyamide.

The teaching or suggestion that the polyamides can be utilized with purified clays is shown in the prior art of Pinnavaia as discussed above. The fact is that both prior art disclosures teach clay that is utilized for the same purpose, which is to make nanocomposites. It is well settled that it is *prima facie* obvious to combine two ingredients, each of which is targeted by the prior art to be useful for the same purpose. *In re Linder* 457 F.2d 506, 509, 173 USPQ 356, 359 (CCPA 1972).

h) Statement in the office action regarding the haze caused by the presence of the quartz is a hindsight-based embellishment of Cleary's actual teachings.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

As it was mentioned in previous response to the arguments, a legal support for examiner's allegation regarding the presence of the impurity in clay can be found in US 6337046 to Bragodia and US 6090734 to Tsipursky.

i) The prior art of Beal merely recites the individual elements of the Applicant's claims and therefore it is legally insufficient to establish *prima facie* case of obviousness.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In this case, the applicant claims that the use of particular polyamides is novel in the present invention. However, since polyamides containing appropriate monomeric components have already been disclosed a suitable for use in nanocomposites, such became a knowledge to those skilled in the art. Therefore if the prior art of Pinnavaia teaches use of polyamides, and the prior art of Beal teaches polyamides more specifically also as those used with nanocomposites, the *prima facie* case of obviousness has been established. Especially when both the prior art disclosures teach clays intercalated and exfoliated with polymers, which include polyamides.

j) The office action fails to teach a motivation to combine specific elements of the Applicant's various claims from the teachings of applied prior art.

The independent claims of the present invention call for a nanocomposite comprising polyamide and clay having quartz content of less than 2%. Term polyamide alone encompasses very large class of polymers.

k) The office action fails to teach specific combination of the present invention and there is no evidence of legally sufficient motivation to combine the prior art references.

With respect to the above argument, the examiner disagrees. Each of the prior art discloses making of nanocomposite. Each one of them recites use of clays and polymers to make the nanocomposites. It is well settled that it is prima facie obvious to combine two ingredients, each of which is targeted by the prior art to be useful for the same purpose. *In re Linder* 457 F.2d 506,509, 173 USPQ 356, 359 (CCPA 1972).

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna W. Lee whose telephone number is (703) 306-5875.

The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (703) 306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

KIWL
April 2, 2002

EDWARD J. CAIN
PRIMARY EXAMINER
GROUP 1500

